RemOx® S ISCO reagent has been specifically manufactured for environmental applications such as remediation of soils and associated groundwater. This product can be used to degrade a variety of contaminants including chlorinated solvents, polyaromatic hydrocarbons, phenolics, organo-pesticides, and substituted aromatics. RemOx S is shipped with a certificate of analysis to document assay and trace metals.

REMEDIATION GRADE
Assay
> 98.8% as KMnO₄

Trace Metals
(see Table 1)

CHEMICAL/PHYSICAL DATA
Formula
KMnO₄
Formula Weight
158.0 g/mol
Form
Granular Crystalline
Specific Gravity
Solid 2.703 g/cm³
3% Solution 1.020 g/mL by weight, 20° C/ 4° C
Bulk Density
Approximately 100 lb/ft³
Decomposition may start at 150° C/ 302° F

SOLUBILITY IN DISTILLED WATER

<table>
<thead>
<tr>
<th>Temperature °C</th>
<th>Solubility g/L</th>
<th>°F</th>
<th>oz/gal</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>27.8</td>
<td>32</td>
<td>3.7</td>
</tr>
<tr>
<td>20</td>
<td>65.0</td>
<td>68</td>
<td>8.6</td>
</tr>
<tr>
<td>40</td>
<td>125.2</td>
<td>104</td>
<td>16.7</td>
</tr>
<tr>
<td>60</td>
<td>230.0</td>
<td>140</td>
<td>30.7</td>
</tr>
<tr>
<td>70</td>
<td>286.4</td>
<td>158</td>
<td>38.3</td>
</tr>
<tr>
<td>75</td>
<td>323.5</td>
<td>167</td>
<td>43.2</td>
</tr>
</tbody>
</table>

SHIPPING CONTAINERS
25-kg pail (55.125-lb) net, with handle, made of high-density polyethylene (HDPE), weighs 3.1 lbs (1.4 kg). It is tapered to allow nested storage of empty pails, stands approximately 15.5 in (39.4 cm) high and has a maximum diameter of 12 in (30.5 cm). (Domestic and international)

150-kg drum (330.75-lb) net, made of 12-gauge steel, weighs 25.3 lbs (11.5 kg). It stands approximately 28.4 in (72.4 cm) high and with approximately 18.25 in (46.4 cm) inside diameter. (Domestic and international)

25-kg pail

MEMO

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HANDLING, STORAGE, AND INCOMPATIBILITY
Avoid contact with acids, peroxides, and all combustible organic or readily oxidizable materials including inorganic oxidizable materials and metal powders. With hydrochloric acid, chlorine gas is liberated. RemOx® S ISCO reagent is not combustible, but it will support combustion. It may decompose if exposed to intense heat. Fires may be controlled and extinguished by using large quantities of water. Refer to the SDS or eSDS for more information.

SHIPPING
RemOx S is classified by the Hazardous Materials Transportation Board (HMTB) and The European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), as an oxidizer. It is shipped under Interstate Commerce Commission’s (ICC) Tariff 19.

Proper Shipping Name: Potassium Permanganate (RQ-100/45.4)
Hazard Class: Oxidizer, Class 5.1
Identification Number: UN 1490
Division/ADR/RID Class: 5.1
Label Requirements: Oxidizer, 5.1
Packaging Group: II
Packaging Requirements: 49 CFR Parts 100 to 199 Sections: 173.152, 173.153, 173.194
Shipping Limitations: Minimum quantities:
Rail car: See Tariff for destination
Truck: No minimum
H.S. Code 28.41.61.00

RemOx S is compatible with many metals and synthetic materials. Natural rubbers and fibers are often incompatible. Solution pH and temperature are also important factors. The material must be compatible with either the acid or alkali also being used.

In neutral and alkaline solutions, RemOx S is not corrosive to iron, mild steel, or stainless steel; however, chloride corrosion of metals may be accelerated when an oxidant such as permanganate is present in solution. Plastics such as polypropylene, polyvinyl chloride Type I (PVC I), epoxy resins, fiberglass reinforced plastic (FRP), Penton, Lucite, Viton A, and Hypalon are suitable. Teflon FEP and TFE, and Tefzel ETFE are best. Refer to Material Compatibility Chart.

Aluminum, zinc, copper, lead, and alloys containing these metals may be (slightly) affected by RemOx S solutions. Actual studies should be made under the conditions in which permanganate will be used.

Table 1: Typical Trace Metal Content and Specifications

<table>
<thead>
<tr>
<th>Element</th>
<th>Typical Analysis (mg/kg)</th>
<th>Specifications (mg/kg)</th>
<th>DL* (mg/kg)</th>
<th>Element</th>
<th>Typical Analysis (mg/kg)</th>
<th>Specifications (mg/kg)</th>
<th>DL* (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag</td>
<td>BDL</td>
<td>0.40</td>
<td>0.048</td>
<td>Hg</td>
<td>BDL</td>
<td>0.05</td>
<td>0.004</td>
</tr>
<tr>
<td>Al</td>
<td>55.85</td>
<td>115.00</td>
<td>0.28</td>
<td>Na</td>
<td>228.03</td>
<td>750</td>
<td>0.069</td>
</tr>
<tr>
<td>As</td>
<td>0.04</td>
<td>4.00</td>
<td>0.006</td>
<td>Ni</td>
<td>0.78</td>
<td>5.00</td>
<td>0.048</td>
</tr>
<tr>
<td>Ba</td>
<td>10.60</td>
<td>50.00</td>
<td>0.016</td>
<td>Pb</td>
<td>BDL</td>
<td>1.00</td>
<td>0.20</td>
</tr>
<tr>
<td>Be</td>
<td>BDL</td>
<td>0.50</td>
<td>0.10</td>
<td>Sb</td>
<td>BDL</td>
<td>1.00</td>
<td>0.20</td>
</tr>
<tr>
<td>Cd</td>
<td>BDL</td>
<td>0.10</td>
<td>0.02</td>
<td>Se</td>
<td>BDL</td>
<td>1.00</td>
<td>0.002</td>
</tr>
<tr>
<td>Cr</td>
<td>1.60</td>
<td>7.50</td>
<td>0.028</td>
<td>Ti</td>
<td>BDL</td>
<td>5.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Cu</td>
<td>0.15</td>
<td>3.00</td>
<td>0.034</td>
<td>Zn</td>
<td>0.87</td>
<td>6.00</td>
<td>0.016</td>
</tr>
<tr>
<td>Fe</td>
<td>0.22</td>
<td>100.00</td>
<td>0.066</td>
<td>DL* = Detection limit</td>
<td>BDL = Below detection limit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DL* = Detection limit
BDL = Below detection limit

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